

Application No. 10/055,799
Filed: October 25, 2001
TC Art Unit: 1714
Confirmation No.: 7498

AMENDMENT TO THE CLAIMS

1. (Previously Presented) A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal; and

applying said composition to a surface of said metal, wherein said composition forms an anti-corrosive, moisture retentive barrier over said surface.

2. (Original) The method of claim 1, wherein said 2,4-trans, trans-hexadiene moiety is in the form of a 2,4-trans, trans-hexadienoic anion.

3. (Previously Presented) The method of claim 1, wherein said providing and applying steps comprise the steps of:

providing an anti-corrosion solution, said solution comprising an effective amount of an anti-corrosion agent in a polar solvent, said agent comprising a 2,4-trans, trans-hexadiene moiety;

applying said solution to a surface of said metal; and

subsequently applying a moisture retentive barrier over said surface.

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4. (Previously Presented) The method of claim 1, wherein in said providing step, said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce said composition.

5. (Previously Presented) The method of claim 1, wherein in said providing step, said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce a powdered composition; and wherein in said applying step, said powdered composition is applied to a surface of said metal by powder metallurgy processing.

6. (Original) The method of claim 1, wherein said material capable of forming a moisture retentive barrier over a surface of said metal is selected from the group consisting of a polar liquid, a non-polar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance.

7. (Original) The method of claim 1, wherein said composition further comprises any one of a polar liquid, a non-polar liquid, a surfactant, an antioxidant, an organic liquid, a polymeric material, a petroleum-based substance, a buffering material, or graphite or particulate carbon in a suspension.

8. (Original) The method of claim 1, wherein said anti-corrosion agent is packaged for delayed release.

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9. (Original) The method of claim 8, wherein said anti-corrosion agent is encapsulated.

10. (Original) The method of claim 1, wherein in said composition, said anti-corrosion agent is present at a concentration of between 0.2 and 58 percent by weight.

11. (Original) The method of claim 1, wherein said composition is first prepared in concentrated form and then diluted.

12. (Original) The method of claim 1, said method further comprising, following said applying step, the step of applying a further coating layer over said surface.

13. (Original) The method of claim 12, wherein said further coating layer is applied by a process selected from the group consisting of painting, electro-plating and electro-polishing.

14. (Original) The method of claim 1, wherein said applying step comprises using said composition as a lubricant for a surface of said metal.

15. (Original) The method of claim 1, wherein said applying step comprises using said composition as a pump oil or brake fluid.

16. (Previously Presented) A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

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providing an anti-corrosion solution, said solution comprising an effective amount of an anti-corrosion agent dissolved in a polar solvent, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

continuously immersing said metal or said device in said solution.

17. (Previously Presented) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation; and

mixing said composition with a preparation of said substance.

18. (Original) The method of claim 17, wherein said substance is a grain product.

19. (Original) The method of claim 17, wherein said substance is a plastic material.

20. (Original) A composition for preventing oxidative corrosion of a metal, said composition comprising:

an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

a material capable of forming a moisture retentive barrier over a surface of said metal.

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21. (Original) The composition of claim 20, wherein said 2,4-trans, trans-hexadiene moiety is in the form of a 2,4-trans, trans-hexadienoic anion.

22. (Original) The composition of claim 20, wherein said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce said composition.

23. (Original) The composition of claim 20, wherein said composition is powdered in final form and is capable of being applied to a surface of said metal by powder metallurgy processing.

24. (Previously Presented) The composition of claim 20, wherein said composition is liquid or viscous in final form.

25. (Original) The composition of claim 20, wherein said material capable of forming a moisture retentive barrier over a surface of said metal is selected from the group consisting of a polar liquid, a non-polar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance.

26. (Original) The composition of claim 20, further comprising any one of a polar liquid, a non-polar liquid, a surfactant, an antioxidant, an organic liquid, a polymeric material, a petroleum-based substance, a buffering material, or graphite or particulate carbon in a suspension.

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27. (Original) The composition of claim 20, wherein said anti-corrosion agent is packaged for delayed release.

28. (Original) The composition of claim 27, wherein said anti-corrosion agent is encapsulated.

29. (Original) The composition of claim 20, wherein said anti-corrosion agent is present at a concentration of between 0.2 and 58 percent by weight.

30. (Original) The composition of claim 20, wherein said anti-corrosion agent is present at a concentration of greater than 20 percent by weight.

31. (Previously Presented) The composition of claim 20, wherein said composition is in the form of a gel, a grease, an oil, a colloidal suspension or a foam.

32. (Currently Amended) A composition for preventing oxidative degradation of a substance, said composition comprising:

an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

a material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation, wherein said material is selected from the group consisting of a polar liquid, a non-polar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance.

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33. (Previously Presented) The composition of claim 32, wherein said material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation is a polymeric material.

34. (Previously Presented) The composition of claim 33, wherein said polymeric material is a glycol.

35. (Previously Presented) The composition of claim 33, wherein said polymeric material is a homo- or heteroglycan polymer.

36. (Previously Presented) The composition of claim 35, wherein said homo- or heteroglycan polymer is a derivatized cellulose.

37. (Previously Presented) The composition of claim 36, wherein said derivatized cellulose is an hydroxyethylated or carboxymethylated starch or cellulose.

38. (Previously Presented) The composition of claim 32, wherein said 2,4-trans, trans-hexadiene moiety is in the form of a 2,4-trans, trans-hexadienoic anion.

39. (Previously Presented) The composition of claim 38, wherein said 2,4-trans, trans-hexadienoic anion is sorbate.

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40. (Previously Presented) The composition of claim 39, wherein said composition further comprises potassium ion as a counter cation.

41. (Previously Presented) The composition of claim 32, wherein said anti-corrosion agent is present at a concentration of between 0.2 and 58 percent by weight.

42. (Previously Presented) The composition of claim 32, wherein said composition is first prepared in concentrated form and then diluted before use.

43. (Previously Presented) The composition of claim 32, wherein said anti-corrosion agent is packaged for delayed release.

44. (Previously Presented) The composition of claim 43, wherein said anti-corrosion agent is encapsulated.

45. (Previously Presented) The composition of claim 32, wherein said composition further comprises any one of an alcohol, a glycol, an antioxidant or an antimicrobial material.

46. (Previously Presented) The composition of claim 32, wherein said composition is liquid or viscous in final form.

47. (Previously Presented) The composition of claim 32, wherein said composition is in the form of a gel, a grease, an oil, a colloidal suspension or a foam.

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48. (Previously Presented) A method for preventing oxidative degradation of a substance, said method comprising the steps of:
providing the composition of claim 32; and
applying said composition to a preparation of said substance.

49. (Previously Presented) The method of claim 48, wherein said applying step comprises mixing said composition with a preparation of said substance.

50. (Previously Presented) The method of claim 48, wherein said substance is an agricultural product or a wood product.

51. (Previously Presented) The method of claim 48, wherein said substance is a plastic material or a paper material.

52. (Previously Presented) The method of claim 49, wherein said substance is a grain.

53. (Previously Presented) The method of claim 48, said method further comprising, following said applying step, the step of applying a further coating layer over said substance.

54. (Previously Presented) The method of claim 48, wherein said applying step comprises using said composition as a lubricant for a surface of a substance.

55. (Previously Presented) The method of claim 54, wherein said substance is a metal.

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56. (Previously Presented) The method of claim 48, wherein said applying step comprises using said composition as a pump oil or brake fluid.

57. (Previously Presented) The composition of claim 21, wherein said 2,4-trans, trans-hexadienoic anion is sorbate.

58. (New) A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal, wherein said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce a powdered composition; and

applying said powdered composition to a surface of said metal by powder metallurgy processing, wherein said composition forms an anti-corrosive, moisture retentive barrier over said surface.

59. (New) A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

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providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal; and applying said composition to a surface of said metal, wherein said anti-corrosion agent in said composition is packaged for delayed release to form an anti-corrosive, moisture retentive barrier over said surface.

60. (New) The method of claim 59, wherein said anti-corrosion agent is encapsulated.

61. (New) A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal;

applying said composition to a surface of said metal, wherein said composition forms an anti-corrosive, moisture retentive barrier over said surface; and

applying a further coating layer over said surface.

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62. (New) The method of claim 61, wherein said further coating layer is applied by a process selected from the group consisting of painting, electro-plating and electro-polishing.

63. (New) A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal; and

using said composition as a pump oil or brake fluid to apply said composition to a surface of said metal, wherein said composition forms an anti-corrosive, moisture retentive barrier over said surface.

64. (New) A method for preventing oxidative degradation of a grain product, said method comprising the steps of:

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said composition further comprising a material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation; and

mixing said composition with a preparation of said grain product.

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65. (New) A composition for preventing oxidative corrosion of a metal, said composition comprising:

an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

a material capable of forming a moisture retentive barrier over a surface of said metal, wherein said composition is powdered in final form and is capable of being applied to a surface of said metal by powder metallurgy processing.

66. (New) A composition for preventing oxidative corrosion of a metal, said composition comprising:

an effective amount of an anti-corrosion agent packaged for delayed release, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

a material capable of forming a moisture retentive barrier over a surface of said metal.

67. (New) The composition of claim 66, wherein said anti-corrosion agent is encapsulated.

68. (New) A composition for preventing oxidative degradation of a substance, said composition comprising:

an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

a polymeric material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation, wherein said polymeric material is a glycol.

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69. (New) A composition for preventing oxidative degradation of a substance, said composition comprising:

an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety; and

a polymeric material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation, wherein said polymeric material is a homo- or heteroglycan polymer.

70. (New) The composition of claim 69, wherein said homo- or heteroglycan polymer is cellulose.

71. (New) The composition of claim 69, wherein said homo- or heteroglycan polymer is a derivatized cellulose.

72. (New) The composition of claim 71, wherein said derivatized cellulose is an hydroxyethylated or carboxymethylated starch or cellulose.

73. (New) The composition of claim 69, wherein said 2,4-trans, trans-hexadiene moiety is potassium sorbate.

74. (New) The composition of claim 68 or claim 69, wherein said anti-corrosion agent is packaged for delayed release.

75. (New) The composition of claim 74, wherein said anti-corrosion agent is encapsulated.

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76. (New) The composition of claim 68 or claim 69, wherein said composition further comprises any one of an alcohol, a glycol, an antioxidant or an antimicrobial material.

77. (New) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing the composition of claim 68 or claim 69; and
applying said composition to a preparation of said substance.

78. (New) The method of claim 77, wherein said applying step comprises mixing said composition with a preparation of said substance.

79. (New) The method of claim 77, wherein said substance is an agricultural product or a wood product.

80. (New) The method of claim 77, wherein said substance is a plastic material or a paper material.

81. (New) The method of claim 78, wherein said substance is a grain.

82. (New) The method of claim 77, said method further comprising, following said applying step, the step of applying a further coating layer over said substance.

83. (New) The method of claim 77, wherein said applying step comprises using said composition as a lubricant for a surface of a substance.

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84. (New) The method of claim 83, wherein said substance is a metal.

85. (New) The method of claim 77, wherein said applying step comprises using said composition as a pump oil or brake fluid.

86. (New) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing the composition of claim 32; and
mixing said composition with a preparation of said substance.

87. (New) The method of claim 86, wherein said substance is a grain.

88. (New) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing the composition of claim 32; and
applying said composition to a preparation of said substance, wherein said substance is selected from the group consisting of an agricultural product, a wood product, a plastic material and a paper material.

89. (New) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing the composition of claim 32;
applying said composition to a preparation of said substance;
and
applying a further coating layer over said substance.

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90. (New) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing the composition of claim 32; and

using said composition as a lubricant for a surface of a substance.

91. (New) The method of claim 90, wherein said substance is a metal.

92. (New) A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing the composition of claim 32; and

using said composition as a pump oil or brake fluid within said substance.